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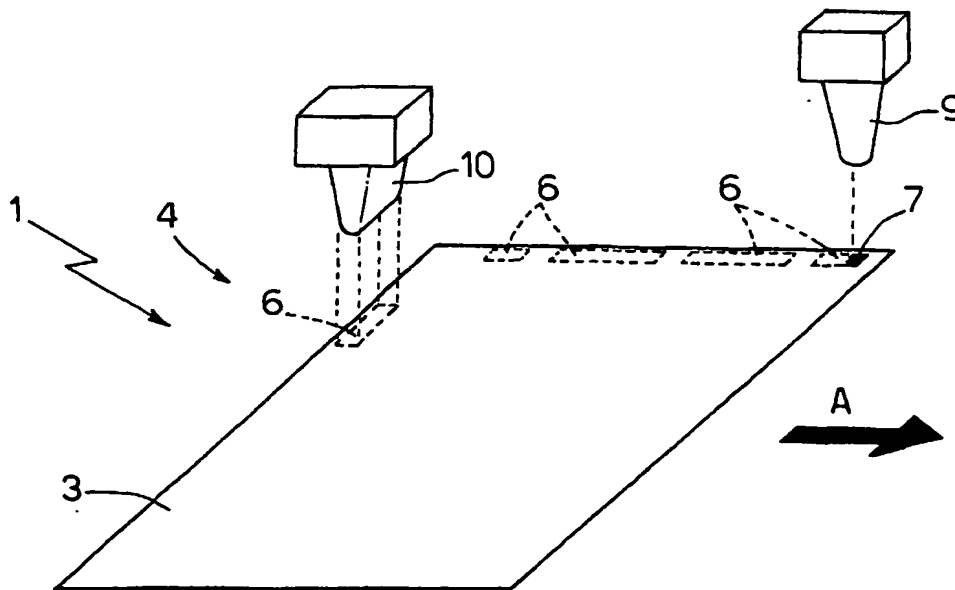
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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD, DEVICE AND BLANK FOR PRODUCING A PACKET



(57) Abstract: A method, device (1) and sheet (3) of packing material for producing a packet (2), a light-absorbent, hot-melt gum being deposited on at least one portion (6) of the sheet (3) of packing material.

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METHOD, DEVICE AND BLANK FOR PRODUCING A PACKET

TECHNICAL FIELD

10 The present invention relates to a method of producing a packet.

More specifically, the present invention relates to a method of producing a packet of cigarettes, to which the following description refers purely by way of
15 example.

BACKGROUND ART

In cigarette packing, hot-melt gum is deposited on certain portions of a blank, the blank is folded about a group of cigarettes, and the gum is melted by applying
20 heating plates to the outer surface of the blank, at the gum-coated portions.

Despite the good quality joints of packets produced as described above, certain portions of the blank may be damaged during melting, by the heating plates directly
25 contacting the blank. Moreover, given the relatively small size of packets of cigarettes, the plate actuating device is fairly complex and expensive.

DISCLOSURE OF INVENTION

It is an object of the present invention to provide a method of producing a packet, designed to eliminate the aforementioned drawbacks, and which at the same time is cheap and easy to implement.

5 According to the present invention, there is provided a method of producing a packet from a blank comprising at least one portion coated with hot-melt gum; the method comprising a melt step to melt the gum by heating; and the method being characterized in that the
10 gum is light-absorbent, and the melt step is performed by irradiating the gum-coated portion of the blank with light to heat the gum.

The present invention also relates to a device for producing a packet.

15 According to the present invention, there is provided a device for producing a packet from a sheet of packing material comprising at least one portion coated with hot-melt gum; the device comprising a melt unit for melting the gum by heating; and the device being
20 characterized in that the gum is light-absorbent, and the melt unit comprises a light source for irradiating the gum-coated portion.

The present invention also relates to a sheet of packing material for producing a packet.

25 According to the present invention, there is provided a sheet of packing material for producing a packet, and comprising at least one portion coated with hot-melt gum; the sheet of packing material being

characterized in that the gum is light-absorbent.

BRIEF DESCRIPTION OF THE DRAWINGS

A non-limiting embodiment of the present invention will be described by way of example with reference to the
5 accompanying drawings, in which:

Figure 1 shows a schematic view in perspective of a detail of a device in accordance with the present invention;

Figure 2 shows a schematic view in perspective of a
10 further detail of a device in accordance with the present invention;

Figure 3 shows a packet of cigarettes formed using the device in Figures 1 and 2.

BEST MODE FOR CARRYING OUT THE INVENTION

15 Number 1 in Figure 1 indicates as a whole a device for producing a "soft" packet 2 of cigarettes; which device 1 comprises a known linear conveyor (not shown) for feeding a blank 3 in a direction A through a gumming unit 4 and a melt unit 5. At gumming unit 4, hot-melt gum
20 is deposited on certain portions 6 of blank 3 to form gummed portions 7; and the gum of gummed portions 7 is melted at melt unit 5. In actual use, as soon as the gum is melted, blank 3 is folded about a respective group 8 of cigarettes wrapped in a sheet of foil to form packet 2
25 of cigarettes.

Gumming unit 4 comprises two gumming nozzles 9 and 10, each for depositing gum on respective portions 6 of blank 3.

The gum comprises a substantially known adhesive thermoplastic material, and a substantially known light-absorbent pigment, in particular for absorbing light in the 350 nm to 1 mm wavelength range, and preferably
5 infrared light. In a preferred embodiment, the gum is dark-coloured, in particular black.

Melt unit 5 comprises a source 11 of light of wavelengths absorbable by said gum, in particular in the 350 nm to 1 mm range, and preferably comprising infrared
10 light. In a preferred embodiment, light source 11 comprises a quartz-iodine lamp. In a further preferred embodiment not shown, light source 11 comprises a laser source for emitting light comprising a laser beam. It should be noted that source 11 is relatively compact and
15 inexpensive.

In actual use, when blank 3 with gummed portions 7 is irradiated by light from source 11, the pigment in the gum of gummed portions 7 absorbs the light, thus heating and melting the gum. At which point, blank 3 is fed to a
20 known folding unit (not shown), where blank 3 is folded about group 8 of cigarettes.

In a further embodiment, blank 3 may be folded and irradiated substantially simultaneously. In which case, it is important to stress that each portion 7 is
25 irradiated before being superimposed on a further portion of blank 3.

In a preferred embodiment, blank 3 is less light-absorbent, i.e. is lighter in colour, than the gum.

Though the above description and accompanying drawings refer to a "soft" packet of cigarettes, the teachings of the present invention obviously also apply to producing packets of cigarettes of all types, e.g. conventional hinged-lid packets with rounded or beveled edges; in which case, blank 3 is defined by a sheet of rigid cardboard packing material, and has fold lines.

Blank 3 may be provided with gummed portions before being fed to device 1, e.g. during production of the blank.

It should be stressed that, though the above description and accompanying drawings refer to the use of a blank 3 for producing "soft" packets of cigarettes, the teachings of the present invention obviously also apply to any type of packing material, in particular for producing packets of cigarettes, e.g. cardboard blanks for producing "rigid" packets, sheets of foil, revenue labels and/or sheets of cellophane.

CLAIMS

1) A method of producing a packet from a sheet (3) of packing material comprising at least one portion (7) coated with hot-melt gum; the method comprising a melt step to melt the gum by heating; and the method being characterized in that the gum is light-absorbent, and the melt step is performed by irradiating the gum-coated portion (7) of the sheet (3) of packing material with light to heat the gum.

2) A method as claimed in Claim 1, characterized by comprising a folding step, in which the sheet (3) of packing material is folded to superimpose the gum-coated portion (7) on a further portion of the sheet (3) of packing material; the melt step preceding the folding step.

3) A method as claimed in Claim 1 or 2, characterized by comprising a gumming step to deposit gum on the sheet (3) of packing material.

4) A method as claimed in any one of Claims 1 to 3, characterized in that said light is light having a wavelength in the 350 nm to 1 mm range.

5) A method as claimed in any one of Claims 1 to 4, characterized in that said light comprises light in the infrared range.

6) A method as claimed in any one of Claims 1 to 5, characterized in that said light comprises a laser beam.

7) A method as claimed in any one of Claims 1 to 6,

characterized in that said gum is dark-coloured, in particular substantially black.

8) A device for producing a packet from a sheet (3) of packing material comprising at least one portion (7) coated with hot-melt gum; the device comprising a melt unit (5) for melting the gum by heating; and the device (1) being characterized in that the gum is light-absorbent, and the melt unit (5) comprises a light source (11) for irradiating the gum-coated portion (7).

9) A device as claimed in Claim 8, characterized by comprising a folding unit for superimposing the gum-coated portion (7) on a further portion of the sheet (3) of packing material; the folding unit being located downstream from the melt unit (5).

10) A device as claimed in Claim 8 or 9, characterized by comprising a gumming unit (4) for depositing gum on the sheet (3) of packing material.

11) A device as claimed in any one of Claims 8 to 10, characterized in that said light is light having a wavelength in the 350 nm to 1 mm range.

12) A device as claimed in any one of Claims 8 to 11, characterized in that said light comprises light in the infrared range.

13) A device as claimed in any one of Claims 8 to 12, characterized in that said light source (11) comprises a laser source.

14) A device as claimed in any one of Claims 8 to 13, characterized in that said light source (11)

comprises a quartz-iodine lamp.

15) A sheet of packing material for producing a packet, and comprising at least one portion (7) coated with hot-melt gum; the sheet (3) of packing material
5 being characterized in that the gum is light-absorbent.

16) A sheet of packing material as claimed in Claim 15, characterized in that said gum is dark-coloured, in particular substantially black.

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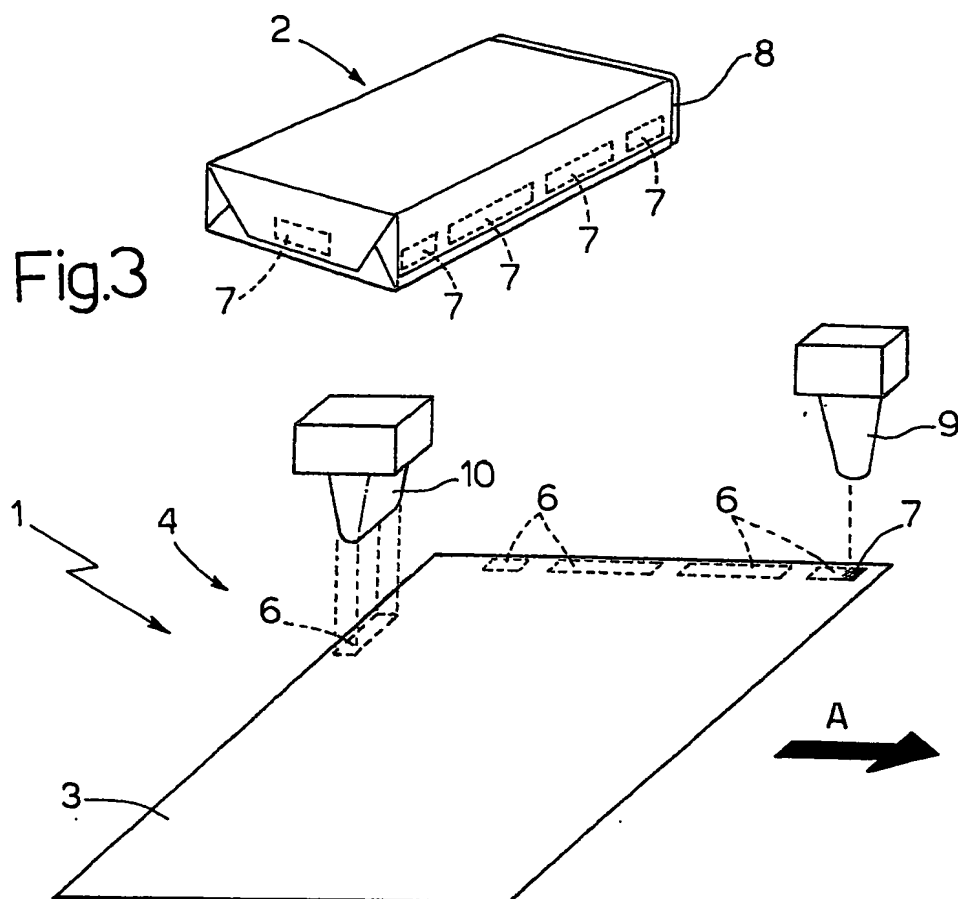


Fig.1

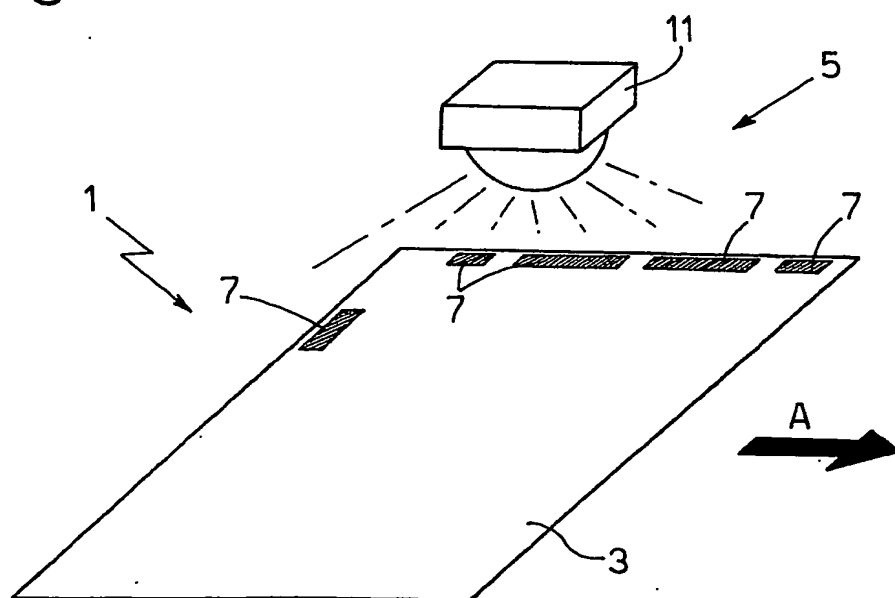


Fig.2

INTERNATIONAL SEARCH REPORT

Internal Application No

PCT/IT 03/00029

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 B65B19/22 B65B51/22

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 B65B B29C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 085 568 A (FOCKE HEINZ ET AL) 25 April 1978 (1978-04-25) column 6, line 1; figures 1,6,14,15 column 7, line 6 - line 25 ---	1-16
X	DE 24 62 180 A (FOCKE PFUHL VERPACK AUTOMAT) 6 May 1976 (1976-05-06) page 9, paragraph 2 -page 10, paragraph 1; claim 17; figure 16 ---	1-16
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A	DE 198 14 932 A (FOCKE & CO) 11 January 2001 (2001-01-11) column 5, line 31 - line 33; figures 1,2 --- -/--	2,9

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

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P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

& document member of the same patent family

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INTERNATIONAL SEARCH REPORT

Internat. Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	<p>"ANORDNUNG ZUM VERPACKEN VON ZIGARETTEN. ODER AHNlichen STABFORMIGEN GEGENSTANDEN" RESEARCH DISCLOSURE, KENNETH MASON PUBLICATIONS, HAMPSHIRE, GB, no. 311, 1 March 1990 (1990-03-01), pages 262-263, XP000104534 ISSN: 0374-4353 page 1 -page 4; figure 1</p>	3,10

INTERNATIONAL SEARCH REPORT

Information on patent family members

Intern: 1 Application No

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